

position in regard to the great and fruitful controversies of half a century ago out of which modern bacteriological doctrine has sprung, will ensure him an honourable place among the founders of biological chemistry.

On the creation of the Faculty of Medicine at Lille, Béchamp accepted the offer of a chair, and he remained there, as Dean, until his resignation in 1887, when he retired to Paris, and, accepting the hospitality of Friedel's laboratory in the rue Michelet, continued his biological inquiries, occupying himself to the end in searching for support for the comprehensive generalisation of organic change on which his fame will ultimately rest.

NOTES.

THE Croonian lecture of the Royal Society will be delivered on Thursday next, May 14, by Prof. G. Retzius, upon the subject of "The Structure of the Central Nervous System of the Higher and Lower Animals."

THE President of the Board of Trade has appointed a committee to prepare a programme for the consideration of the delegates to the International Conference on Electrical Units and Standards to be held in London in the ensuing autumn, and to make arrangements for the reception and assembly of the delegates attending the conference. The members of the committee are Mr. G. R. Askwith, K.C., Sir John Gavey, C.B., Dr. R. T. Glazebrook, F.R.S., Major P. A. MacMahon, F.R.S., Major W. A. J. O'Meara, R.E., C.M.G., and Mr. A. P. Trotter. Mr. M. J. Collins, of the Board of Trade, will act as secretary to the committee.

M. BIGOURDAN read a paper at the meeting of the Paris Academy of Sciences on April 27 on the use of wireless telegraphy for weather forecasting. He pointed out that our weather is associated with the passage of atmospheric depressions arriving from the west, and generally from parts of the Atlantic situated north of 35° N. latitude, and it is estimated that about one-half of these depressions come from North America, whilst the others form in the open Atlantic. To forecast the arrival of depressions it is necessary to have observations from the open ocean. Floating observatories have been suggested, coupled with the continents on either side of the Atlantic. M. Bigourdan suggests that steamships should communicate, to the responsible authorities, their position and meteorological observations by wireless telegraphy, and by this means modify and improve our conditions for weather forecasting to the benefit of the general community. For some time past our English Meteorological Office has published in its Daily Weather Report wireless telegrams from ships of His Majesty's Navy.

THE sixteenth Congress of German Electrotechnical Engineers will be held at Erfurt on June 11-14.

THE Entomological Society will hold a conversazione on Friday, May 15, in the rooms of the Civil Service Commission, Burlington Gardens.

THE Rumford medal of the American Academy of Arts and Sciences has been awarded to Dr. E. G. Acheson, of Niagara Falls, for his work with the electric furnace.

THE Chemical Society of Rome, the Chemical Society of Milan, and the Association of Industrial Chemists of Turin will, from January 1, 1909, be united under the name of the Italian Chemical Society.

PROF. W. H. WALKER, professor of technical chemistry at the Massachusetts Institute of Technology, has been

awarded the Nichols medal by the New York Section of the American Chemical Society.

MESSAGES from Catania report that dense clouds of vapour issued from the central crater of Mount Etna on April 29. The crater of 1852 in the Valle del Bove was also in eruption. On May 2 the volcano was again in active eruption, and a stream of lava was slowly advancing.

A CONVERSAZIONE will be given by the Medical Society of London on Monday, May 18, in the rooms of the society, Chandos Street, Cavendish Square. After the reception by the president, the Fothergillian medal will be presented to Sir Almroth Wright, F.R.S. An oration will be given by Mr. T. Clinton Dent on the subject of the after results of injuries.

ON Tuesday next, May 12, Prof. F. T. Trouton will begin a course of two lectures at the Royal Institution on (1) "Why Light is believed to be a Vibration"; (2) "What it is which Vibrates." The Friday evening discourse on May 15 will be delivered by Dr. H. T. Bulstrode on "The Past and Future of Tuberculosis," and on May 22 by Prof. J. C. Kapteyn on "Recent Researches in the Structure of the Universe."

At the Institution of Electrical Engineers on April 30 Prof. Silvanus P. Thompson, F.R.S., gave the first Kelvin memorial lecture, his subject being "The Life and Work of Lord Kelvin." Before the lecture was delivered Mr. H. F. Parshall presented the institution with a bust of Benjamin Franklin on behalf of the American Institute of Electrical Engineers as a souvenir of their visit to England about a year and a half ago. The gift was acknowledged by Lieut.-Colonel R. E. Crompton, the president of the institution.

THE sixteenth International Congress of Americanists will be held under the presidency of Baron Weckbecker at the University of Vienna on September 9-14. The object of the congress is to promote scientific inquiries into the history of both Americas and of their inhabitants. Communications may be oral or written, and may be in one of several languages, English included. For further information application should be made to Herr Franz Heger, Vienna (Austria), I. Burgring 7. A programme will be issued early in the summer.

PROF. ANGELO MOSSO, of Turin, writes to remind us of the fact, to which attention was directed in an article by the late Sir Michael Foster in NATURE of March 9, 1905 (vol. lxxi, p. 445), that the Royal Society has the right to nominate two investigators to occupy tables in the Monte Rosa and Col D'Olen international laboratories. The tables are available for the study of botany, bacteriology, zoology, physiology, terrestrial physics, and meteorology. The two tables at the disposal of the Royal Society are, it will be remembered, due to the generosity of Dr. Ludwig Mond, F.R.S.

At the annual general meeting of the Institution of Civil Engineers on April 28, Mr. J. C. Inglis was elected president of the institution. The council has made the following awards for papers read and discussed during the past session:—a Telford gold medal to Mr. W. Barclay Parsons (New York); a Watt gold medal to Sir Whately Eliot; George Stephenson gold medals to Sir John Ottley, K.C.I.E., Dr. A. W. Brightmore, and Messrs. J. S. Wilson and W. Gore; Telford premiums to Messrs. F. W. Davis (Darlington), C. R. S. Kirkpatrick (Newcastle-on-Tyne), Hugh T. Ker (Glasgow), G. H. Scott, R. R. Gales (India), and S. H. Ellis.

THE exceptionally cold weather which had prevailed throughout April was temporarily interrupted with the opening days of May, and on the first and second of the present month some remarkably high temperatures were reported from different parts of England. At Greenwich the shade temperature on Saturday, May 2, registered 75°, which is a record reading for that day during the last half century. The thermometer on the previous day registered 73°. The report of the weather issued by the Meteorological Office for the week ending last Saturday states that at Jersey and Bettws-y-Coed the thermometer rose to 78° on May 2, and to 76° at places in the south-east of England and the Midland counties, and to 75° in the east and south-west of England. There was an abrupt change to cool weather again on Sunday, May 3, when in London the highest temperature was 52°.

THE death is announced of M. C. E. Chamberland, the sub-director of the Pasteur Institute, Paris, at the early age of fifty-seven. M. Chamberland is probably best known in connection with the porcelain filter which bears his name together with that of his great master, Pasteur. He did much work on surgical asepsis, showing that the germs in the air may be disregarded provided the skin, the instruments, and the dressings be rendered sterile. He also contributed much to the prevention of animal diseases by the method of vaccination with attenuated viruses.

WE regret to have to announce the death of M. Alfred Riche, one of the last of Dumas's pupils at the Sorbonne. Riche was born at La Roche-sur-Vannion on February 5, 1829. He was originally intended for the law, but becoming attached to science, after a course of study at the École Centrale, he accepted the position of *aide préparateur* under Dumas (1849). He subsequently became *préparateur* at the Institut Agronomique at Versailles, and then at the Sorbonne under Balard and Dumas. In 1874 he succeeded Bussy in the chair of mineral chemistry, which he occupied until 1899, and where he had as assistants Jaques and Pierre Curie, and as a pupil Moissan, who eventually succeeded and predeceased him. In 1862 Riche became an assayer at the Monnaie, and ultimately, in 1887, director of assays, a post which he continued to fill until last year, and he had charge of the revenue laboratories under the Minister of Commerce. He published a considerable number of papers on organic and mineral chemistry, chiefly on the organo-metallic derivatives of tin and arsenic, on copper-tin alloys, on the electrolytic estimations of metals, on sugar-analysis, &c. For many years he was the principal editor of the *Journal de Pharmacie et de Chimie*, and was the author of a number of text-books and manuals.

MR. F. HOWARD COLLINS has sent us a copy of a paper by him, reprinted from the *Nautical Magazine*, in which he describes a method of representing by diagrams the characters of the lights of lighthouses, and of fog signals, so that they may be identified at a glance. He suggests that the system should be applied to Admiralty Charts and to the Admiralty List of Lights. A leading authority upon the subject has favoured us with the following remarks upon the proposed method and application:—"The writer proceeds on the assumption that each lighthouse completes its cycle in a minute. This is not the case, and this system of diagrams could not apply to lights the periods of which are (a) more than a minute; (b) not an integral fraction of a minute. That is to say that only lights with periods of 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, or 60 seconds can be represented. This would exclude the Nab, Hanois, Royal Sovereign, Dover Pier, South Foreland,

Sunk, Galloper, Orfordness, Flamborough, and many other of our most important lights. Apart from this, it is considered that the diagrams are no improvement on the clearly composed description of each light as given at present in the light lists (such as Flash, 5 seconds, Eclipse, 10 seconds); indeed, it is very doubtful if they would convey any meaning at all to the less educated members of the seafaring community. This applies with additional emphasis to the diagrams representing fog signals. The extra expense of diagrams (and their periodical corrections) would be objectionable. The application of this system to the Admiralty Charts is altogether impracticable."

SEALING in 1907, according to a note by Mr. T. Southwell in the April *Zoologist*, was, owing to bad weather and the heavy ice-pack, nearly as bad as in 1905, which was the worst since 1898. Two of the fleet of twenty-four vessels were wrecked, and the number of skins secured by the others fell short of last year's total by close on 100,000, with a decrease of rather more than 30,000l. in money value. The total number of seals killed was just over 245,000, the market price being 4.20 dollars per cwt. for those of young animals and 3 dollars for those of adults.

ACCORDING to *Museum News* for April, an exhibition of South American birds' nests has been installed in the children's museum, which has proved highly attractive alike to children and to adults. Excellent examples of protective resemblance are shown among the nests of certain flycatchers, in some of which the lichen-covered walls blend insensibly into the supporting branch or simulate a knot or other natural excrescence. Other exhibits are nests of the slate-headed tody swinging at the end of long, slender branches, and looking like bunches of drift-grass left in their present positions by receding waters. Nests of two species of spiny-tails (a group of woodhewers) are also shown, which by their dissimilarity in structure and material would not suggest relationship in their builders. The nests of five species of spiny-tails agree, however, in having a lining of grey lichens.

A COLLECTION of valuable and scarce books appertaining to botany and zoology, including a series of zoological works by J. Gould and D. G. Elliot, is offered for sale in the antiquarian catalogue recently issued by Mr. B. Quaritch.

A CATALOGUE of new or noteworthy flowering plants from Mexico, Central America, and the West Indies, determined by Dr. J. M. Greenman, comprises a number of new species of *Senecio* and various composites, also additions to the *Verbenaceæ*, *Euphorbiaceæ*, and other orders. It is issued as Publication No. 126 of the Field Museum of Natural History.

THE account of the desert basins of the river Colorado in the delta region where it flows into the Gulf of California provides a remarkable record. Attention was directed to the locality by the rise of water in the Salton Lake at the head of the delta from November, 1904, to March, 1907, since which time the waters have receded. The recession affords an opportunity for noting the spread of the vegetation, that is chiefly halophytic and partially xerophytic. With this purpose, surveys have been made by workers from the desert laboratory of the Carnegie Institution, beginning at the time when the flood was at its height. The preliminary account, by Dr. D. T. Macdougall, is published as a Bulletin of the American Geographic Society (December, 1907). Reference is made

to a hot spring near Lake Maquata, where the water gave a temperature of 120° F. Two species of the algal genus *Phormidium*, and a new species of rain-water fish, *Lucania brownii*, were taken there.

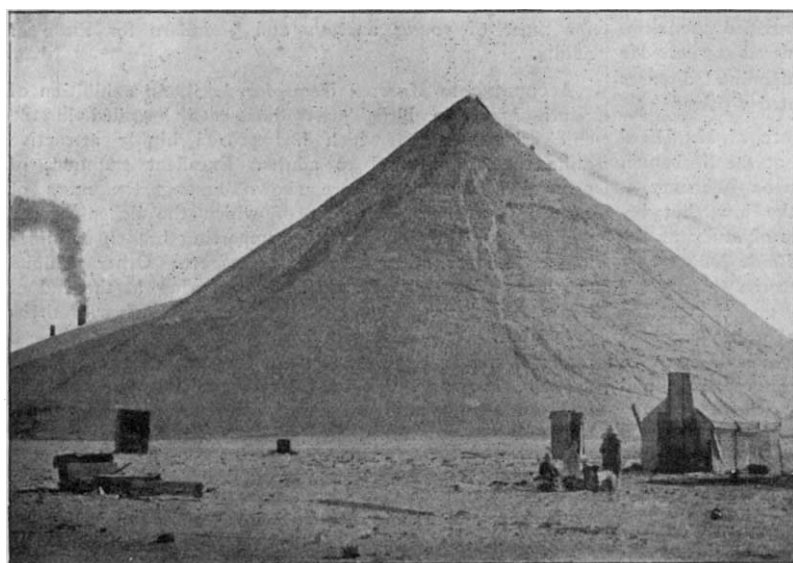
THE Geological Survey of Western Australia has issued an important report (Bulletin No. 29) upon the geology of the Cue and Day Dawn districts, Murchison goldfield, by Mr. H. P. Woodward. Owing to the voluminous character of the report, it has been issued in two parts, the first of which is confined to the Cue and Cuddingwarra centres, and the second to the Day Dawn centre. Much of the latter is occupied by an elaborate report upon the Great Fingall mine, the subject being dealt with, not only from the standpoint of the geologist, but also from that of the mining engineer. This mine, which produced 95.38 per cent. of the total production of 778,606 ounces from the district up to the end of 1906, is a low-grade property, which, owing to excellent management, is being worked at a profit. The reports are illustrated by five large geological maps, twenty-three mine plans, and nineteen

evidence has accumulated to show that phylloxera is amenable to treatment; in these circumstances growers are being officially advised to return to old methods, and aim principally at quality.

THREE bulletins have reached us from the University of Wisconsin, all dealing with matters of considerable practical importance. One describes the conditions necessary for growing lucerne, a crop which is common enough in the United States as a rule, but is not as yet much grown in parts of Wisconsin. Since the development of the plant depends on the presence of the proper bacteria in the soil, farmers are recommended in doubtful cases to inoculate the land by scattering on each acre about two tons of soil from old lucerne land. If no such soil is available, the University Experiment Station is willing to supply hundred-pound lots so that a start may be made on a few rods of land, from which, of course, a considerable area can afterwards be inoculated. Another bulletin deals with the necessity for properly housing pigs, and the third urges the importance of systematically examining herds for tuberculosis, and slaughtering all animals that give the tuberculin reaction.

A REPORT on the delimitation of the Turco-Egyptian boundary (June-September, 1906), by Messrs. E. B. H. Wade, B. F. E. Keeling, and J. T. Craig, which has just been published by the Survey Department of the Egyptian Ministry of Finance, furnishes an excellent example of the application of modern methods of surveying so as to yield a maximum of accuracy in result with a minimum expenditure of time. The survey operations consisted in running a traverse 210 kilometres in length, from a point on the beach at Taba, on the Gulf of Akaba, to Rafa, on the Mediterranean coast, fourteen points being determined on the route. The method employed was that of latitudes and azimuths, an assumed longitude being first taken for Taba, where the work began, and a final longitude obtained for Rafa, where it ended, by exchange of telegraphic signals with the Helwan Observatory, near Cairo. Notwithstanding the difficult nature of the country, both as regards topography and the troubles from dust-haze and mirage incident to work on a heated desert plateau, the traverse was completed in thirty-one days, including the computations and plotting of the boundary. The demarcation by permanent signals occupied fifteen days, and it is further interesting to note that the total cost of the survey operations amounted to £E460. The report includes detailed examples of the observations and reductions, and is valuable as a specimen of this class of work.

A CONVENIENT and handy form of refractometer, especially adapted for the rapid determination of the refractive indices of faceted gem-stones, but also applicable for liquids, has been designed by Dr. G. F. Herbert Smith, and two patterns of the instrument have been constructed and placed on the market by Mr. J. H. Steward. With the later (1907) pattern it is possible to determine a faceted stone in whatever form of mounting it may be set, and



Tailings Dump of the Great Fingall Mine.

admirable photographs. Particularly striking is the view, here reproduced, of the waste heap to which the sands from the cyanide process are delivered by belt-carriers. This heap, being more than 100 feet in height, forms a conspicuous landmark.

A vigorous article on the crisis in the French vineyard appeared in the *Times* (April 25), in which the author, Prof. L. Daniel, traces the sequence of events that have led to the present disastrous conditions. Primarily the fault, is ascribed to the indiscriminate confidence placed in grafting as a panacea for combating phylloxera. The grafted vines also gave a large yield that suggested increased profits, so that growers were ready to overlook any possible disadvantages, such as deterioration in quality. As a result, there has been a large production of inferior wines, that are also unsuitable for storing. Prof. Daniel attributes the inferiority to the difference in root-growth, the American vine being a surface feeder, while the roots of the French vines penetrate deeper. It is noted how, in the course of time, grafted plants have deteriorated, and

a scale visible in the field of the instrument enables the refractive index to be read directly to the second place of decimals. The range extends from 1.300 to 1.775, which includes the refractive indices of corundum (ruby and sapphire), the only gem-stones falling beyond this being almandine, demantoid, zircon, sphene, and diamond. The two patterns of instrument have been described in detail by Dr. Herbert Smith in the *Mineralogical Magazine* (1905 and 1907), and a more popular account is given by him in a pamphlet published by Mr. J. H. Steward ("The Herbert Smith Refractometer, and its Use, particularly for the Discrimination of Faceted Gem-stones," London, 1907, pp. 28). In this pamphlet a concise summary is given of the methods applicable for the discrimination of faceted gem-stones, it being pointed out that the determination of the refractive indices is often the only trustworthy test that can be applied when the stones are mounted. A carefully compiled table of the constants of thirty-four mineral species used in jewellery contains some new determinations, and will be found useful for reference.

THE thirtieth yearly report of the Deutsche Seewarte, for the year 1907, shows that the work of that active and useful institution has been continued on the same lines as hitherto; the constant increase of its operations, as in the case of most other meteorological organisations, has made it necessary to add to its working staff. The number of observers in the mercantile marine was 962 at the close of the year; they are encouraged in their work by the award of medals and diplomas for excellent observations, as well as by a liberal presentation of official publications. The most important event of the year in the department of weather prediction was the acquisition of telegraphic reports from Iceland and the Færøe Islands, which have been found of great service; the early morning reports from the British Isles are also much appreciated. As in this country, special forecasts for agriculturists are issued during the summer season, but the dissemination of the information is on a much larger scale. Exploration of the upper air by means of kites and balloons is actively continued whenever practicable.

In the monthly meteorological charts of the North Atlantic and Indian Oceans for May, issued by authority of the Meteorological Committee, every available space is, as usual, occupied with data of importance to seamen. The face of the charts shows the average statistics relating to the atmosphere and the sea for the month in question, with latest intelligence on such subjects as ice, monsoons, &c. Among the interesting matters dealt with on the back of the charts we find a discussion of the observations of the Sargasso or Gulfweed from the records kept for the Meteorological Office during the seven years ended 1907, and the monthly frequency of fog in the Gulf of St. Lawrence for the period 1892-1906. There are also charts showing the cyclone tracks in the South Indian Ocean for 1848-1905, and a picture of the Southern Ocean ice during each of the months April to June, for twenty-three years ended 1907; some of these huge icy masses are said to have projected 1000 feet above the water-line, and to have been from two to forty miles in length.

DR. MOSCHOU, of Smyrna, has invented some improvements in the beams and bearings for physical balances. Balance beams have previously been designed which are roughly elliptical in cross-section or are of a channel section. According to the present invention, a section is adopted which is approximately elliptical, but has vertical sides, and if desired the elliptical tube may be strengthened by a rhombic frame. The bearings of the balance have also been considerably modified; for the usual knife edges,

discs taking the form of two truncated cones placed base to base are substituted. For the centre bearing there are two such discs secured to the elliptical beam, and at the ends of the beam similar discs are supported by small axles. In some cases two discs are provided at each end of the beam, and the balance pans are supported upon these by hooks, hollowed at their bearing surfaces so that they always take up the same position upon the discs whenever they are removed and replaced. When two discs are thus used, the swinging of the balance pans backward and forward is largely prevented.

PART V. of the *Verhandlungen der deutschen physikalischen Gesellschaft* for the present year contains the results of Dr. P. Nordmeyer's further work on the mean specific heats of pure substances between the two temperatures -188°C . and 18°C . The method is identical with that used previously, and depends on the determination of the weight of liquid air evaporated by a body at ordinary temperature placed in it. The following are the values obtained:—sodium, 0.253; magnesium, 0.222; calcium, 0.157; iron, 0.097; molybdenum, 0.063; thallium, 0.038; gold, 0.033; aluminium, 0.182; yellow phosphorus, 0.178; potassium, 0.170; bromide of potassium, 0.103.

AN eighth edition of Mr. Andrew Jamieson's "Elementary Manual of Applied Mechanics" has been published by Messrs. Charles Griffin and Co., Ltd. The book has been revised, some additions have been made to the text, and further examination papers included.

MESSRS. SMITH, ELDER AND CO. have almost ready for publication a work on "Animal Life," by Dr. F. W. Gamble. The volume comprises a series of studies in the life-history of typical members of the animal kingdom, describing their vital activities in relation to their structure, and the general scheme of development.

THE current issue of the *Central*, the organ of the Central Technical College Old Students' Association, contains a portrait of Dr. G. T. Moody, and articles on the electrification of railways, by Mr. Lionel Calisch, and on the City of Victoria and Hill district waterworks, Hong Kong, by Mr. D. Jaffé.

A THIRD edition of Dr. Alex. Findlay's translation of Ostwald's "Principles of Inorganic Chemistry" has been published by Messrs. Macmillan and Co., Ltd. The fundamental character of the book remains unaltered, and the changes in detail are not great, but here and there slight mistakes have been corrected and some additions made.

THE report of the council and proceedings of the Hampstead Scientific Society for the year 1907 has been received. The membership of the society now stands at 286, and its finances are in a satisfactory state. As usual, the lectures given at the general meetings during the winter have been appreciated widely. Among the list of lecturers we notice the names of Prof. E. H. Starling, F.R.S., and of Dr. C. W. Andrews, F.R.S. The activity of the various sections of the society has been well maintained.

MR. JOHN COOKE, editor of Murray's "Guide to Ireland," is preparing an account of the tumuli and other pagan antiquities of the Boyne Valley for the "Handbook" of the British Association. It is to be hoped that at last their astronomical orientation will be given. Mr. Nathaniel Colgan, author of the "Flora of Co. Dublin," and one of the editors of "Cybele Hibernica," will deal with the local botany. The geology of the immediate neighbourhood of Dublin is specially interesting, ranging as it does from the Cambrian Bray Head to the Carboniferous limestone of the great central plain.